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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/668,376

09/24/2003

Yoshiyuki Suzuki

900-477

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03/06/2007

NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER

FICK, ANTHONY D

ART UNIT

PAPER NUMBER

1753

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|-----------|---------------|
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3 MONTHS

03/06/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/668,376

Applicant(s)

SUZUKI ET AL.

Examiner

Anthony Fick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 1-3.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1 through 9, 13 and 14, drawn to a solar cell module, classified in class 136, subclass 243.
  - II. Claims 10 through 12, drawn to a method of producing a solar cell, classified in class 438, subclass 57.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product of group I can be made by a different process than group II; specifically the metal foil of group I can be attached by a number of methods (electrodeposition, CVD, soldering) other than using a heat sensitive adhesive as required by the method of group II.
4. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required

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because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Warren Burnam on February 12, 2007 a provisional election was made without traverse to prosecute the invention of group I, claims 1 through 9, 13 and 14. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10 through 12 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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8. Claims 1, 4 through 9, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 61-108178, hereafter referred to as JP '178.

JP '178 discloses a solar cell module as shown in figures 1 and 3.

Regarding claim 1, figure 1 shows solar cells comprising a photoelectric conversion layer, a light receiving face electrode provided on a front surface of the layer, a rear electrode on the rear surface of the layer, and a protective sheet bonded to a surface of the rear electrode, 7. JP '178 discloses the sheet is made of a metal and is adhered to the electrode with solder or an adhesive (abstract), thus the metal foil adhered to the electrode is electrically connected.

Regarding claims 4 and 5, figures 2 and 3 show the metal foil bonded to a peripheral portion of the electrode and is patterned in an outer shape (circle for 2, mesh for 3).

Regarding claims 6, 7 and 8, figure 3 shows the mesh metal foil has an opening, the rear electrode being partly exposed through the opening. Further, the figure shows the openings have areas much bigger than 1.5% of the area of the foil (18 openings for the area, thus each opening is approximately 5% of the total metal foil area). The figure also shows the openings are rectangular.

Regarding claim 9, this claim is a product by process claim and the claim does not further limit the structure of the solar cell. Thus, JP '178 meets all the structural requirements of the claim and is deemed to be anticipatory.

Regarding claim 13, figure 1 shows a solar cell module comprising solar cells arranged in a planar array, connection members which connect the solar cells in series,

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2, and a sealant for sealing the solar cells, 3. Each solar cell is disclosed as discussed above in relation to claim 1.

Regarding claim 14, figure 3 shows a mesh metal foil having openings, the rear electrodes being partly exposed through the openings. The module in figure 1 with the mesh metal foils will have the sealant, 3, contacting the rear electrodes through the openings in the mesh metal foil.

9. Claims 1, 2, 4, 5, 6, 8 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Wakuda et al. (U.S.P.G.Pub 2003/0000571).

Wakuda discloses a solar cell as shown in figures 15A and 15B.

Regarding claim 1, Wakuda discloses the solar cell comprises a photoelectric conversion layer, a light receiving face electrode provided on the front surface of the layer and a rear electrode provided on the rear surface of the layer (paragraph 0041). Figure 15B shows a metal foil bonded to the rear electrode and electrically connected to the electrode (paragraphs 0063 and 0064).

Regarding claim 2, Wakuda discloses creating the rear electrode by firing an aluminum paste along with an adhesive to attach the aluminum plate (paragraph 0064).

Regarding claims 4 and 5, figure 15B shows the metal foil bonded to a peripheral portion and patterned in an outer shape.

Regarding claims 6 and 8, figure 15B further shows the mesh metal foil to have openings, the rear electrode being partly exposed through the openings, and the openings having a rectangular shape.

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Regarding claim 9, this claim is a product by process claim and the claim does not further limit the structure of the solar cell. Thus, Wakuda meets all the structural requirements of the claim and is deemed to be anticipatory.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '178 as applied to claims 1, 4 through 9, 13 and 14 above, and further in view of Oya (U.S.P.G.Pub 2001/0029977).

The disclosure of JP '178 is as stated above for claims 1, 4 through 9, 13 and 14.

The difference between JP '178 and claim 2 is the requirement of a specific rear electrode.

Oya teaches a conductive paste for solar cells. The conductive paste contains aluminum powder, an organic vehicle and glass frit, an adhesive (paragraph 0006). The paste is fired to create the electrode (paragraph 0029).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the aluminum conductive paste as in Oya for the back electrode of JP '178 because the aluminum paste secures ohmic contact between the substrate and the back electrode and also improves the characteristics of the solar cell (Oya paragraph 0007). Because Oya and JP '178 are both concerned with solar cells, one would have a reasonable expectation of success from the combination. Thus the combination meets the claim.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '178 as applied to claims 1, 4 through 9, 13 and 14 above, and further in view of Hayashi et al. (U.S. 6,288,323).

The disclosure of JP '178 is as stated above for claims 1, 4 through 9, 13 and 14.

The difference between JP '178 and claim 3 is the requirement of a specific metal foil.

Hayashi teaches a thin film solar cell module. Hayashi teaches the use of an aluminum foil placed underneath the solar cells (column 10, paragraph 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an aluminum foil as in Hayashi as the metal protection sheet of JP '178 because aluminum foil improves the humidity resistance and water resistance to protect the solar cell from water (Hayashi column 10, paragraph 1). Also

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the selection of a specific thickness of foil is a design choice and absent any unexpected results would be obvious to those in the art to choose a specific thickness for a specific application. Because Hayashi and JP '178 are both concerned with photovoltaic devices, one would have a reasonable expectation of success from the combination. Thus the combination meets claim 3.

### ***Double Patenting***

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 1 through 9, 13 and 14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 through 29 of copending Application No. 10/167,649. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims describe a solar cell that meets all the requirements of the present

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claims. Claim 14 of the copending application provides a reinforcing material of a metal plate, electrically joined to the back electrode of the solar cell, thus meeting claim 1 of the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday thru Friday 7 AM to 4 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick  
AU 1753  
March 1, 2007

*ADF*

  
NAM NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700